

MEMO:

To: Hubert C. Lambert

Subject: Gooseberry

By: Donald C. Norseth and Earl M. Staker

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Analysis of Scofield operations was made to determine a possible settlement of the Carbon-Sanpete County controversy in response to your request. We approached the problem from a supply, use, and time basis.

Earl Staker compiled a theoretical water supply of the Scofield drainage basin as shown on the following chart.

Theoretical Water Supply Scofield Drainage Basin						
Contributory Drainage			Water Yield			
Total in Basin	<u>2/</u> Gooseberry	<u>1/</u> Scofield	Gooseberry		Scofield	
Acres	Acres	Acres	Ac-ft.	%	Ac-ft.	%
98,025	5300	92,725	4,856	6.8	67,271	93.2

The results of Earl's study would show a total anticipated water supply of 72,127 acre-feet with 4,856 acre-feet coming above the narrow site and 67,271 being the remaining tributary drainage of Scofield.

Actual water records would show this figure to be a little high but within the realm of reasonable accuracy for the time and information used. To properly analyze his figures one would have to consider the following:

<u>1/</u> Scofield Drainage	<u>2/</u> Gooseberry Drainage
0.1 @ 15" = 11,590	0.1 @ 20" = 887
0.2 @ 5" = 7,733	0.9 @ 10" = 3,969
0.6 @ 10" = 46,400	
0.1 @ 2" = 1,548	
	<hr/> 4,856
<hr/> 67,271 ac-ft.	

	<u>Acre-feet</u>
1. Scofield water budget	42,006
2. Evaporation and bank storage	6,267
3. Maximum Fairview Lakes Diversion	2,500
4. Irrigation above Scofield Reservoir	2,290 <u>3/</u>
Total utilization of Scofield Basin	53,063 <u>27</u>

The water budget calculated on Scofield for the period of 1954 through 1964 was compared with the study run by the Bureau of Reclamation and would show the following:

Study	Period	<u>Demand on Water Supply</u>		
		<u>Natural Flow</u>	<u>Storage</u>	<u>Total</u>
Bureau of Reclamation	1923-1962	26,200	24,200	50,200
State Engineer	1954-1964	21,126	20,880	42,006

A time study of Scofield water budget would show that Scofield storage for the past 10 years has been limited by demand ~~for~~ ⁱⁿ water supply ~~during the months~~ ^{to} of November through May. Comparison of this storage period with the runoff at the narrow site as shown by the U. S. G. S. records of 1960-1961-1962 records shows an average water year flow of 6,249 acre-feet of that 3,992 acre-feet might be available ^{to} the Gooseberry Reservoir during the months of ~~October~~ ^{November} through May. If you then add the 2,500 acre-feet maximum transmountain diversion, this would present a possible storage annually of 6,492 acre-feet in the Gooseberry Reservoir. *Notes: Records indicate that Gooseberry storage will accommodate surplus runoff from the U. S. G. S. records.*
Attached are hydrograph and other basic information used.

3/ Use of water by irrigation above Schofield Reservoir.	<i>See equivalent amount of water flow at a time when direct diversions would be affected.</i>
661.2	
101.2 meadows	
<u>762.4</u>	
X3 @ 3 acre-feet per acre	
<u>22,872</u>	
	2,290 acre-feet used by irrigation

lack of information is given as out of estimates.

Water Year	Gooseberry Cr. Nr. Scofield	Gooseberry Cr. Nr. Fairview	Gooseberry Cr. Nr. Scofield June - Sept.	Gooseberry Cr. Nr. Fairview June-Sept est.	Gooseberry Cr. Nr. Scofield during Storage Period (Oct.-May)	Amount available for Gooseberry Project if Scofield Gets The First 12,020 at Mammoth	Gooseberry Cr. Nr. Fairview during Storage Period (Oct.-May)
1941	19,910	11,000	7,599	4,200	12,311	291	6,800
1942	21,120	11,550	6,439	3,520	14,681	2,661	8,030
1943	11,810	6,550	4,759	2,640	7,051	0	3,910
1944	16,870	9,250	7,339	4,030	9,531	0	5,220
1945	15,750	8,700	6,304	3,480	9,446	0	5,220
1946	10,520	5,800	2,516	1,390	8,004	0	4,410
1947	13,610	7,550	3,477	1,930	10,133	0	5,620
1948	9,240	5,200	2,619	1,470	6,621	0	3,730
1949	16,150	8,900	4,331	2,390	11,819	0	6,510
1950	11,670	6,500	3,911	2,180	7,759	0	4,320
1951	12,970	7,200	4,166	2,310	8,804	0	4,890
1952	29,520	16,100	12,217	6,660	17,303	5,283	9,440
1953	12,200	6,800	5,956	3,320	6,244	0	3,480
1954	8,490	4,200	1,930	1,110	6,560	0	3,790
1955	9,440	5,300	2,801	1,570	6,639	0	3,730
1956	10,940	6,150	2,642	1,490	8,298	0	4,660
1957	18,520	10,200	12,160	6,800	6,360	0	3,400
1958	16,950	9,400	5,036	2,790	11,914	0	6,610
1959	7,340	4,200	2,360	1,350	4,980	0	2,850
1960	8,900	5,000	2,546	1,430	6,354	0	3,580
1961	5,380	3,140	760	522	4,620	0	2,618
1962	18,190	10,070	3,112	2,044	15,078	3,058	8,026
1963	10,590	5,820	1,878	1,095	8,712	0	4,725
TOTAL		175,280				115,569	
AVE.		7,621				5,025	

Water Available For Use At The
Narrows Site On An Average After
Direct Flow Is Bypassed

1,400 Brooks
5,025 Ave. at Site
1,500 Fairview Ditch
7,925
- 700 Res. Loss
7,225
- 300 Evap.
6,925

Total out of Scofield 1,024,560
Ave.

44,525 → 17.1% of total Ave. Discharge From Scofield

DRAINAGE AREA

Gooseberry Nr. Fairview	7.9 sq. mi. = 4.8% of drainage
Gooseberry Nr. Scofield	16.4 sq. mi.
Price River Ab. Scofield Res.	62 sq. mi.
Scofield Res.	163 sq. mi.
Price River Nr. Scofield	163 sq. mi.
Heiner	455 sq. mi.